



Estimates of illegal and unreported seafood imports to Japan



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ABSTRACT

An investigation of illegal and unreported fishing in source countries indicates that 24–36% of 2.15 million tonnes of wild-seafood imports to Japan in 2015 were of illegal and unreported origin, valued at \$1.6 to \$2.4 billion, out of a total import of US\$ 13 billion. A supply chain case study of crab imported from Russia illustrates the intricacies of trade in illegal seafood products in this region. Weakly framed import regulations and outdated fisheries policies appear to be driving an inadvertent trade of illegal and unreported seafood products into the Japanese market. A multilateral approach could extend the strict requirements for food safety to the country of origin and provide more complete supply chain traceability for all commercial seafood species imported by Japan.

1. Introduction

Illegal, Unreported and Unregulated (IUU) fishing poses a significant problem to the sustainable management of fish stocks worldwide. With 58% of global fish stocks fully utilized and 31% exploited at unsustainable levels, IUU fishing practices can have a major impact on food security, livelihoods and economic growth in developing countries [1]. With several changes in international policing [2] and, recently, the implementation of the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA) in 2016 [3], trade measures to improve traceability and catch documentation deserve more attention than ever before. Opaque supply chains can mask IUU activities [4] and have motivated the need to not only understand where illegal fishing takes place but also how such products enter the global market place. To supplement shortages in domestic production, developed economies outsource processed fish in large volumes from other countries each year. Sourcing practices in the principal seafood market states such as USA, Japan and EU can have rippling effects on management practices in developing countries. The need for market state responsibility to control IUU trading practices has already captured the attention of policy makers in both the USA and EU. Previous studies have shown that as much as 20–32% of seafood imported by USA is of IUU origin [5]¹, and measures within the USA to improve this situation have already been implemented [6]. To increase our understanding of the impact of illegal seafood trade on key market states, this paper provides estimates of the amount of illegal and unreported seafood imports to Japan, the third largest destination for

seafood consumed in the world.

Fish is soul food for Japanese citizens. For several centuries, several iconic dishes such as sushi and festivals such as “*Doyo no Ushi*” (eel festival), have been intricately linked to culture and cuisine in Japan. Seafood is an integral part of the Japanese culture and comprises more than 40% of animal protein consumed each year [7,8]. Over the past century Japan has dominated global seafood trade both through its fishing fleet (active in all major oceans and RFMOs) and through import of high value fishery products. Japanese cuisines such as sushi [9] have also expanded their appeal to other global markets. With loss of access to historic fishing grounds due to implementation of exclusive economic zones (under UNCLOS) by other coastal states [10,11], Japan has supplemented shortages in domestic supply over the past three decades through seafood imports [12–14] sourced from global trade. In 2009, up to 38% of seafood consumed in Japan was imported from other countries, rising to about 40% in 2015. [15]. A growing preference for meat coupled with a weakening yen have led to a decline in seafood consumption (from 61.2 kg per annum in 2005–27.0 kg in 2014: [16–18]. Nevertheless, Japan is still the third leading seafood importer in the world, importing 2.54 million tonnes of seafood valued at US\$ 13.8 billion in 2014 [19]. Concurrently, although import volumes have decreased, the value of imported products has surpassed past records [20]. Japan is also the world's largest market for high value species, importing 470,000 t of tuna every year [21]. High-value seafood imported by Japan includes fresh and frozen tuna, shrimps, salmon, crabs and eels. This high import rate makes Japan vulnerable to the inadvertent import of illegal seafood products and any major destination

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market for illegal seafood will be a significant source of revenue for illegal fishery operators and organized crime.

2. Methods

2.1. Scope of the analysis

This study is focused on estimating volume and value of illegal and unreported seafood products imported entering Japan. Similar to previous studies [22], the estimates in the current study do not cover “unregulated” fisheries or seafood products landed by Japanese flagged vessels in domestic ports. Furthermore, the current study does not look at IUU fishing within domestic fisheries of Japan. Finally, the work looked only at edible wild seafood imports of marine origin, and excluded the following products: (a) farmed species, (b) freshwater species, (c) ornamental fish, (d) frozen fillets of mixed species, and (e), fishmeal for pet food. Processed products such as prepared foodstuffs that utilized multiple species of a similar texture and colour, thus masking the identity of the actual species were also excluded from this analysis.

2.2. Estimation methods

The analysis depends on knowing the amount and constituents of seafood imported into Japan, the proportion that derives from wild caught fish and the provenance profile of these imports by country and region. In the first phase, trade flow analysis was used to understand the proportion of wild seafood caught by exporting countries within their own EEZs as well as imports from other countries through the reprocessed trade. Afterwards, the proportion of illegal and unreported fish through all the points in the supply chain from the exporting country were estimated for products exported to Japan. Japanese Customs and Trade data does not differentiate between wild caught and farmed species, so interviews with suppliers provided additional information for this assessment for the top 9 countries exporting to Japan. As many of the product codes in Japan Customs import trade data lacked details of species and source countries, 36 interviews were conducted with port officials, customs agents, traders, seafood companies and regional trade experts in each of the top 9 exporting countries to identify sourcing patterns for the 27 products (Table 1). For example, 77,000 t of squids and cuttlefish imported by Japan from China were sourced from multiple jurisdictions and were either caught by Chinese vessels or imported from other countries. Similarly, the majority of the tuna exported by Thailand to Japan was itself imported from various Asia-Pacific countries, only a small quantity being caught by Thai fleets.

Three alternative trade flow scenarios, increasing in complexity and used in the analysis are depicted in Figs. 1–3. All 27 products from the top 9 countries in the current study fall under one of these three trade flow scenarios. IUU risk for each of its sub-categories (e.g., X%(IUU), Y%(IUU), Z%(IUU) or RPT%(IUU)) contribute to aggregated IU risk for each product. Upper and lower percentage estimates were assigned in each case, so that uncertainty can be fully expressed in an envelope or percentage values for the final results. For example, in the case of sea urchins from Russia, which fall under trade flow scenario 1, the percentage of illegal and unreported fishing is calculated based on various IUU infractions committed by Russian fleets catching sea urchins within the Russian Far East EEZ. On the contrary, in the case of tuna exported by Thailand to Japan, a majority of the exported volumes originated from reprocessed tuna imports by Thai companies from other Asia-Pacific countries. In this case, the illegal and unreported risk for various categories of fleets is aggregated for both Thai fishing fleets and imported tuna from other countries rendering this import and example of trade flow scenario 3. Discrepancies associated with batch mixing of legal and illegal catches in the processing streams in Thailand [23] as well as checks on import documentation and inspections at ports in Thailand also contributed to the overall IUU risk envelope for such products.

Table 1
Estimates of 27 wild-caught seafood products selected from top nine countries for the IUU Seafood Imports Analysis.

	Country	Products	Quantity imported in 2015, (tonnes)	Value, US\$
1.	South Korea	Bigeeye tuna	9271	98,400,157
		Spanish mackerel	1560	8345,785
		Skipjack tuna & Bonito	612	807,669
2.	China	Squids & Cuttlefish	77,000	320,071,760
		Eels	18,138	389,386,884
		Shrimps ^a	8147	75,089,566
		Tuna	7675	69,129,305
3.	Russia	Salmon	32,553	175,498,157
		Crabs	14,941	227,016,033
		Sea Urchins	7994	49,893,132
4.	Chile	Fishmeal	17,675	36,150,876
		Sea Urchins	1922	65,702,033
		Toothfish	147	2223,760
5.	Thailand	Squids & Cuttlefish	10,973	102,732,735
		Shrimps ^b	3568	37,858,776
		Tuna	2420	14,065,876
6.	USA	Alaska Pollock	122,280	344,952,165
		Salmon	22,065	114,426,537
		Crabs	6501	113,325,446
7.	Indonesia	Skipjack Tuna	28,471	76,524,330
		Shrimps ^c	15,368	172,355,824
		Tuna (YFT, BET, SBT)	7491	63,171,049
8.	Vietnam	Shrimps ^d	15,000	170,894,191
		Squids & Cuttlefish	6289	45,169,380
9.	Taiwan	Bigeeye tuna	36,434	217,989,066
		Yellowfin tuna	18,022	73,892,082
		Eels	3275	74,397,429
Total			495,792^e	3139,470,003

^a 56% of shrimps exported to Japan were of wild origin, and Chinese companies also imported shrimps from other Asia-Pacific countries for trade as reprocessed product.

^b According to industry sources, only 10% of the Thai shrimps exported to Japan were of wild origin.

^c Interviews with seafood exporters and government agencies in Indonesia suggested that about 47% of shrimps exported to Japan were of wild origin.

^d Information from seafood traders in Vietnam suggested that 30% of Vietnamese shrimps exported to Japan were of wild origin.

^e 495,792 t were worth 374,437,645,278 Japanese Yen and 3139,470,003 US dollars.

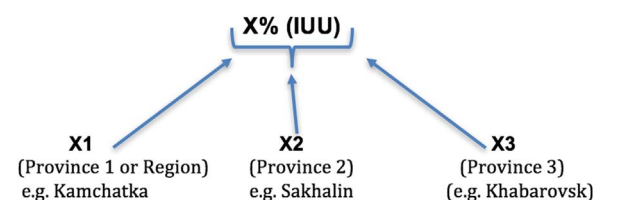


Fig. 1. Trade Flow Scenario 1 Species caught within the Exclusive Economic Zone (EEZ) of the exporting country.

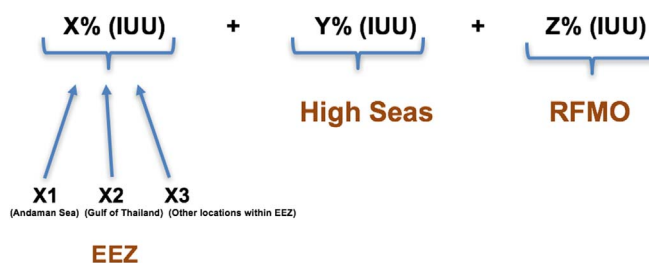


Fig. 2. Trade Flow Scenario 2. Species caught within EEZ, High Seas and RFMO waters by fishing vessels flagged to the exporting country.

2.3. Estimation of seafood imports to Japan

In 2014 Japan, USA and EU were the top three seafood importers in the world taking 59% by quantity and 63% of value [24]. In terms of international seafood trade, Japan and USA each had a share of 14% in

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